MDR-IF420RK/IF520RK

SERVICE MANUAL

Photo: MDR-IF520RK

US Model
Canadian Model
AEP Model
UK Model
E Model
Australian Model
Tourist Model

MDR-IF420RK/IF520RK is composed of the following models.

	MDR-IF420RK	MDR-IF520RK
Cordless Headphones	MDR-IF420R	MDR-IF520R
Transmitter	TMR-IF420R	TMR-IF520R

SPECIFICATIONS

General

Modulation system
Frequency modulation

Carrier frequency
Right 2.8 MHz
Left 2.3 MHz

Frequency response
12 – 24,000 Hz (MDR-IF420RK)
10 – 24,000 Hz (MDR-IF520RK)

Transmitter

Power source DC IN 9V jack accepts power supplied from the AC power adaptor for use on the following voltages:

Where purchased	Operating voltage
U.S.A./Canada	120 V AC, 60 Hz
U.K.	240 V AC, 50 Hz
European countries	220 - 230V AC, 50 Hz
Japan (exept for Japanese domestic model)	110V/120V/220V/240V AC, 50/60 Hz
Other countries	220 - 230 V AC, 50/60 Hz or 120 V AC, 60 Hz

Audio input Phono jacks/stereo mini jack

Dimensions Approx. 121 x 260 x 135 mm ($4\,^7/_8$ x $10\,^1/_4$ x $5\,^3/_8$ in) (w/h/d)

Mass Approx. 190 g (6.7 oz)

Headphones

Power source Supplied Ni-Cd rechargeable battery
R6 (size AA) battery

Mass Approx. 320 g (11.3 oz) (MDR-IF420RK)
Approx. 390 g (13.8 oz) (MDR-IF520RK)
including the supplied Ni-Cd battery

Supplied Ni-Cd rechargeable battery

Model name NC-AA (HJ)
Type Ni-Cd
Voltage 1.2 V
Capacity 600 mAh

Design and specifications are subject to change without notice.

CORDLESS STEREO HEADPHONES SYSTEM

SONY®

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SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

This section is extracted from instruction manual.

SECTION 1
GENERAL

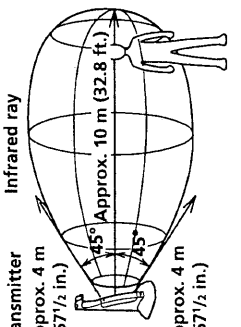
Welcome!

Thank you for purchasing the Sony MDR-IF520RK/MDR-IF420RK Cordless Stereo Headphone System. Before operating the unit, please read this manual thoroughly and retain it for future reference.
Some features are:

- Cordless system that allows you to listen to a program free from the restriction of a cord.
- Broad horizontal listening area that gives you superb sound virtually anywhere in the room.
- Self-adjusting headband for fitting your head perfectly.
- The power of the headphones turns on and off automatically every time you put the headphones on and off (Auto power on/off function).
- Surround effect that enables you to enjoy the sound which simulates the sound field such as concert hall or theater. (MDR-IF-520RK only)
- The VOL control adjusts the volume level of both channels. Furthermore, you can adjust the balance between the left and right channels with the BALANCE control. (MDR-IF520RK only)
- The power source of the headphones can be selected from either a supplied rechargeable battery or a commercially available R6 (size AA) dry battery.

About the infrared rays communication

The illustration below shows the approximate area covered by the infrared rays emitted from the transmitter.



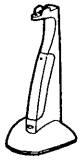
Notes

- This system utilizes infrared rays for communication so noise (hissing) can be heard in the headphones as you move farther away from the transmitter. The sound will also cutoff and noise occur if the infrared rays are blocked. These are characteristics of infrared ray communication and do not indicate an equipment breakdown.
- The infrared rays will not penetrate walls or opaque glass, therefore, be sure to stay within sight of the transmitter.
- When you use the headphones inside the area illustrated in the diagram, the transmitter can be placed in the front, behind or by the side of the listener.
- The sound you hear varies according to your position and the transmitter position. Try finding a position which yields the best sound.

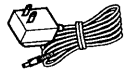
Unpacking

Check that you have the following items:

- The transmitter



- AC power adaptor

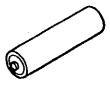


- Connecting cord (phono plugs ↔ stereo mini plug)

- Unimatch plug adaptor (stereo mini jack → stereo phone plug)

- The headphones

- Ni-Cd rechargeable battery NC-AA (HJ)

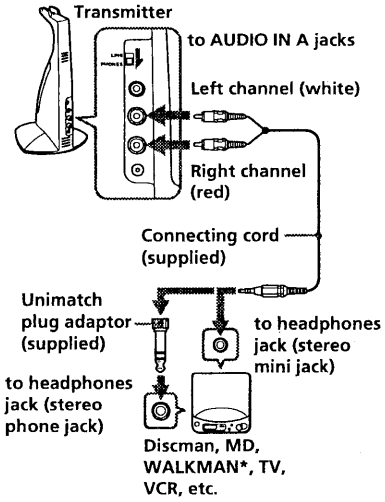


Setting up the transmitter

1 Connect the transmitter to audio/video equipment. Select one of the hookups below depending on the jack type:

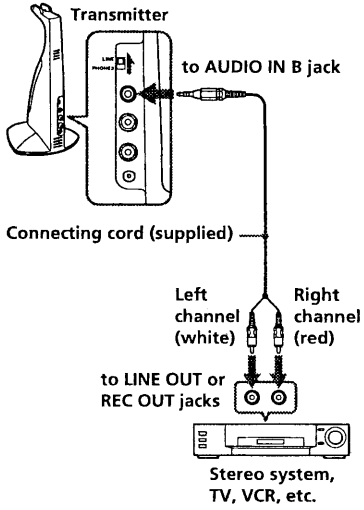
ⓐ To connect to a headphones jack

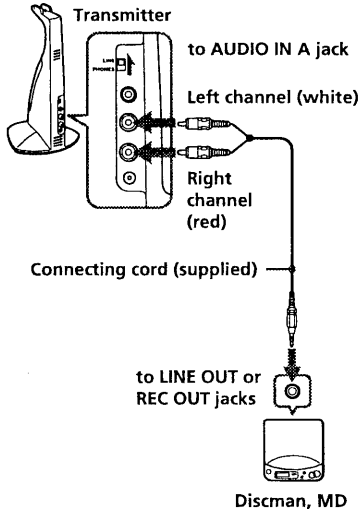
Set the input source switch to PHONES.


Transmitter
to AUDIO IN A jacks
Left channel (white)
Right channel (red)
Connecting cord (supplied)
Unimatch plug adaptor (supplied)
to headphones jack (stereo mini jack)
to headphones jack (stereo phone jack)
Discman, MD, WALKMAN*, TV, VCR, etc.

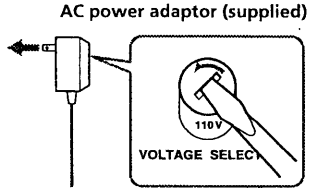
ⓑ To connect to LINE OUT or REC OUT jacks

Set the input source switch to LINE.





2 If your AC power adaptor is equipped with a voltage selector, before connecting the AC power adaptor to an AC outlet, set it to the operating voltage in your area with a screw driver.



3 Connect the transmitter to a power source.

Notes

- Do not connect to the AUDIO IN A jack and B jacks at the same time. If you do so, the audio signals may be mixed.
- Use only the supplied AC power adaptor. Do not use any other AC power adaptor.

Polarity of the plug

- If the plug of the AC power adaptor does not fit in the AC outlet, use the supplied AC plug adaptor.
- When you connect the connecting cord directly to an earphone jack, the audio signal will not be output through the right channel. In such a case, use the separately sold PC-236HG plug adaptor.

* WALKMAN is a registered trademark of Sony Corporation.

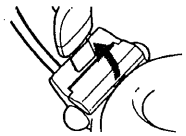
Charging the headphones' battery

Using the headphones for the first time

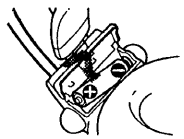
The headphones are powered by either a supplied rechargeable battery or a commercially available R6 (size AA) battery.

When you use the headphones with the supplied rechargeable battery for the first time, charge the battery in the following manner.

1 Open the battery compartment lid on the left inner side of the hanger.

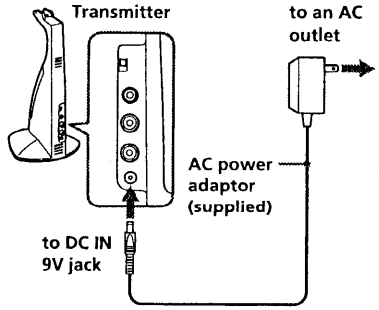


2 Install the supplied rechargeable battery with its + and – matched to those of the battery compartment. Do not use a rechargeable battery other than the supplied one.

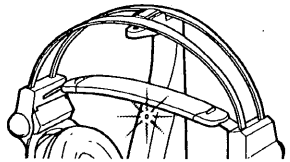


3 Close the battery compartment lid.

4 Connect the supplied AC power adaptor to the transmitter.



5 Rest the headphones on the transmitter so that the contact pins fit into the contact holes on the headphones. The charging indicator lights.



Notes

- Use only the supplied rechargeable battery NC-AA (HJ).
- You cannot recharge other R6 (size AA) rechargeable battery (NC-AA etc.) with this unit.

When the indicator is not lit

Check the connection to make sure that the contact pins are properly fitted into the contact holes on the headphones, or if the headphones are rested on the transmitter correctly.

To recharge the headphones' battery after use

To charge the battery, follow steps 4 and 5.

Since little electric current is used for charging, there is no need to worry about overcharging.

Charging and using hours

Approx. charging hours	Approx. using hours	
	MDR-IF420RK	MDR-IF520RK
1	1	1 hur. 15
24*	24	30

* the hours to charge the battery fully that is not charged at all

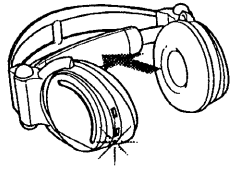
Battery life

Battery	Approx. hours	
	MDR-IF420RK	MDR-IF520RK
Sony alkaline battery LR 6 (SG)	70	80
Sony battery R6P (SR)	35	40

Check the remaining power of the headphones' battery

Pull up the suspender, and check that the headphones' power indicator lights in red. You can now use the headphones.

Charge the battery or install the new dry battery, if the power indicator light is weak or turned off and the sound become distorted or has a lot of noise.



Notes

- During recharging, the transmitter is turned off automatically.
- When the life of the rechargeable battery is shortened by half even after a proper recharging, take the headphone set to a Sony dealer and have the old rechargeable battery replaced by a new one.

Using the headphones with a commercially available R6 (size AA) dry battery

Install the battery in the manner as described in steps 1 through 3 of "Charging the headphones' battery."

When a R6 (size AA) dry battery is installed, the battery charge function is not activated.

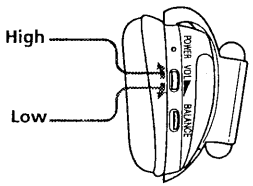
Listening to a program

1 Turn on the audio/video equipment connected to the transmitter.

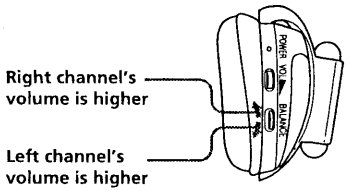
When the audio signal is input, the transmitter turns on automatically and the infrared emitters glow. If the transmitter is connected to the headphone jack, **set the volume control of the audio source equipment as high as possible but not so high that the audio signal gets distorted.**

2 Put on the headphones and the power turns on automatically. The power indicator glows red when the power turns on.

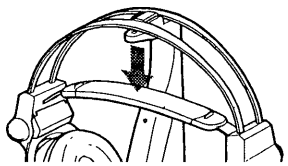
3 Adjust the volume.



Adjust the balance between the left and right channels. (MDR-IF520RK only)



Auto power on/off function
When you remove the headphones, the power turns off automatically. Do not allow the suspender to be pulled up, otherwise the headphones will be switched on.



Mute function
If a hissing noise is heard when the infrared rays are obstructed, or the headphones are used outside of the effective range (see the section "About the infrared rays communication"), the mute function will be activated and the sound will not be heard from the headphones. To restore the sound, move nearer toward the transmitter or remove the obstruction.

When no audio signal is received for more than approximately five minutes
The transmitter will be turned off automatically.

After listening to a program
Take the headphones off and rest them away onto the transmitter. The transmitter power will automatically be turned off. If the supplied rechargeable battery is used for the headphones, the charging indicator on the transmitter lights up. The rechargeable headphone battery is continuously charged when the headphones are placed on the transmitter.

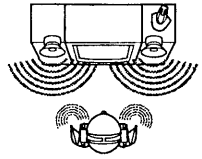
Since little electric current is used for charging, there is no need to worry about overcharging.

As MDR-IF520RK/MDR-IF420RK Cordless Stereo Headphone System is not affected by the memory effect of the Ni-Cd battery, it is advisable that the headphones are rested on the transmitter whenever not in use so that the headphones' battery is always charged.

When a R6 (size AA) dry battery is used for the headphones, the battery charge function is not activated.

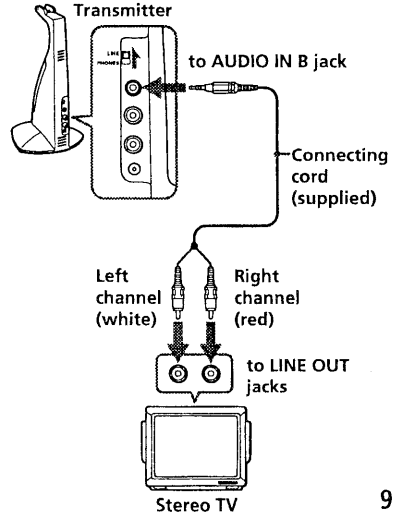
Note
The infrared emitters light up when the transmitter is turned on. The brightness of the emitters may not be uniform, however, this is not a malfunction.

Enjoying the TV or VCR with the sound presence — surround effect (MDR-IF520RK only)
When using the audio equipment with the stereo speakers
With this headphone system, you can enjoy surround sound by listening to the sound from the speakers of a connected stereo TV or audio equipment and to the rear sound from the headphones created by the built-in surround circuit.
To listen to the sound with this effect, proceed the following.

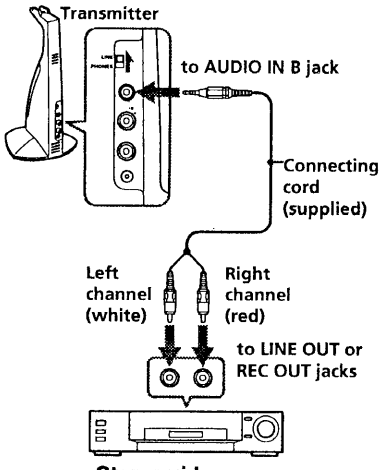


1 Connect the transmitter to audio/video epuipment.
Select one of the hookups below.
Set the input source switch to LINE.

① Connecting to the stereo TV with an audio output jack

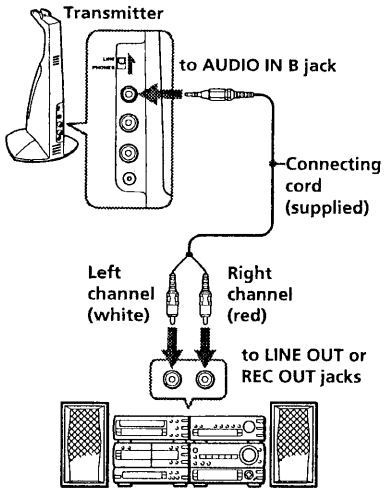


② Connecting to stereo video epuipment or laser disc player, etc.



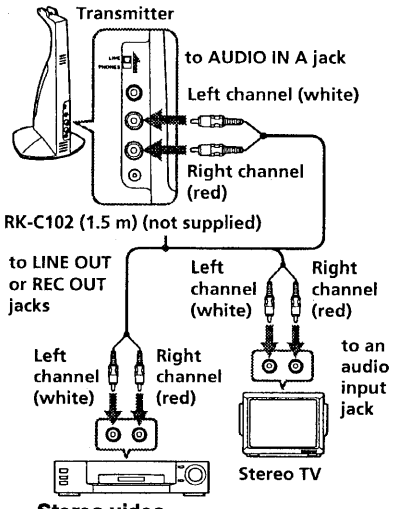
Stereo video, Laser disc player, etc.

③ Connecting to audio equipment



Stereo audio system

④ When the all audio output jacks of the epuipment that you are connecting to are used.



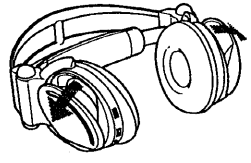
Stereo video, Laser disc player, etc.

Note

Do not connect to the headphones jack of TV or audio equipment. If you do so, front speaker sound will be lost, and the surround effect can not be obtained.

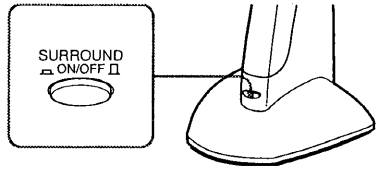
2 Open the housing cap as described below.

In doing so, you can listen to the sound from the speakers on TV or audio system as well as from the headphones in order to obtain the full surround effect.



3 Press the SURROUND button to activate the surround effect and then play the connected equipment.

To cancel the surround effect, press that button again.



Notes

The surround effect does not work in the following cases:

—The source sound is monaural.

—The source sound is bilingual.

- When you use the surround effect, do not connect the transmitter to the surround terminals of the audio/video equipment. If you do so, the surround effect may not be obtained or sound may not be output.

GB

SECTION 2
ELECTRICAL ADJUSTMENTS

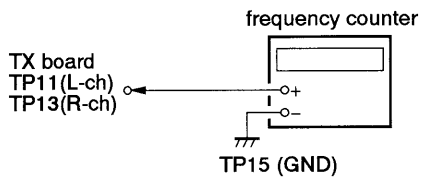
Note:

1. The adjustments should be performed in the order given. (As a general rule the transmitter section (TMR-IF420R/IF520R) adjustments should be completed before performing the headphones section (MDR-IF420R/IF520R) adjustment.)
2. The adjustments and measurements should be performed for both L-ch and R-ch unless otherwise indicated.
3. L-ch adjustment should be completed before performing R-ch adjustment.
4. Supply 9 V dc to the transmitter section (TMR-IF420R/IF520R) and 1.2 V dc to the headphones section (MDR-IF420R/IF520R) as the power voltage.

TRANSMITTER SECTION

2-1. OSCILLATING FREQUENCY ADJUSTMENT

Connection:



Adjustment Procedure:

No signal state.

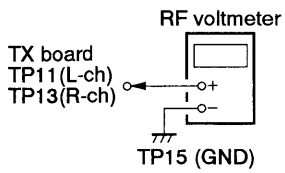
1. Connect the frequency counter to TP11 (L-ch) and TP13 (R-ch).
2. Adjust with L51 (L-ch) and L1 (R-ch) so that the reading on the frequency counter becomes the specified value.

Specified Value:

L-ch	L51	2.3 MHz ± 2 kHz
R-ch	L1	2.8 MHz ± 2 kHz

2-2. RF LEVEL ADJUSTMENT

Connection:



Adjustment Procedure:

No signal state.

1. Connect the RF voltmeter to TP11 (L-ch) and TP13 (R-ch).
2. Adjust with RV51 (L-ch) and RV1 (R-ch) so that the reading on the RF voltmeter becomes the specified value.

Specified Value:

L-ch	RV51	480 mV ± 2.5 mV
R-ch	RV1	480 mV ± 2.5 mV

HEADPHONES SECTION

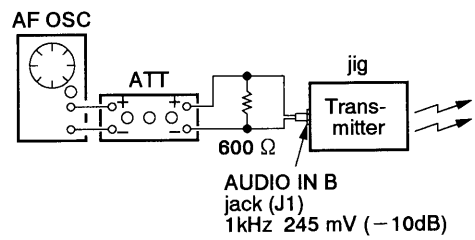
Note:

1. On adjusting the headphones section (MDR-IF420R/IF520R), use the transmitter (TMR-IF420R/IF520R) as a jig.
2. The headphones section adjustment must be made with the PD/BP boards connected to the RX board with the specified wire.
3. The MUTE ON POINT adjustment must be made while taking care of the photodiodes (D51, D52, D101, D102) not to be exposed directly to external lights (such as incandescent lamp and sun light).

0dB=0.775V

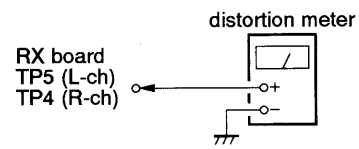
2-3. TUNING ADJUSTMENT

Preparation:



1. Feed a signal to jig (TMR-IF420R/IF520R) and connect a power supply to DC IN jack (J4).
2. Apply DC 1.2 V between VCC and GND.
3. Set the RV1 (VOL) on the RX board to the minimum position.

Connection:

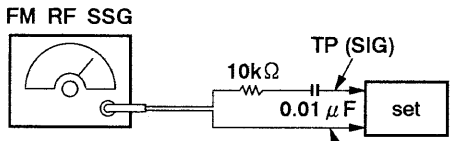


Adjustment Procedure:

1. Connect the distortion meter to TP5 (L-ch) and TP4 (R-ch).
2. Turn on the power.
3. Adjust with L5 (L-ch) and L6 (R-ch) to minimize the reading on the distortion meter.

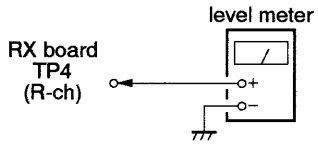
2-4. MUTE ON POINT ADJUSTMENT

Preparation:



Carrier frequency: 2.8 MHz
Modulation: 1 kHz
Deviation: 22.5 kHz
Output level: 32 dBμV e.m.f.

Connection:

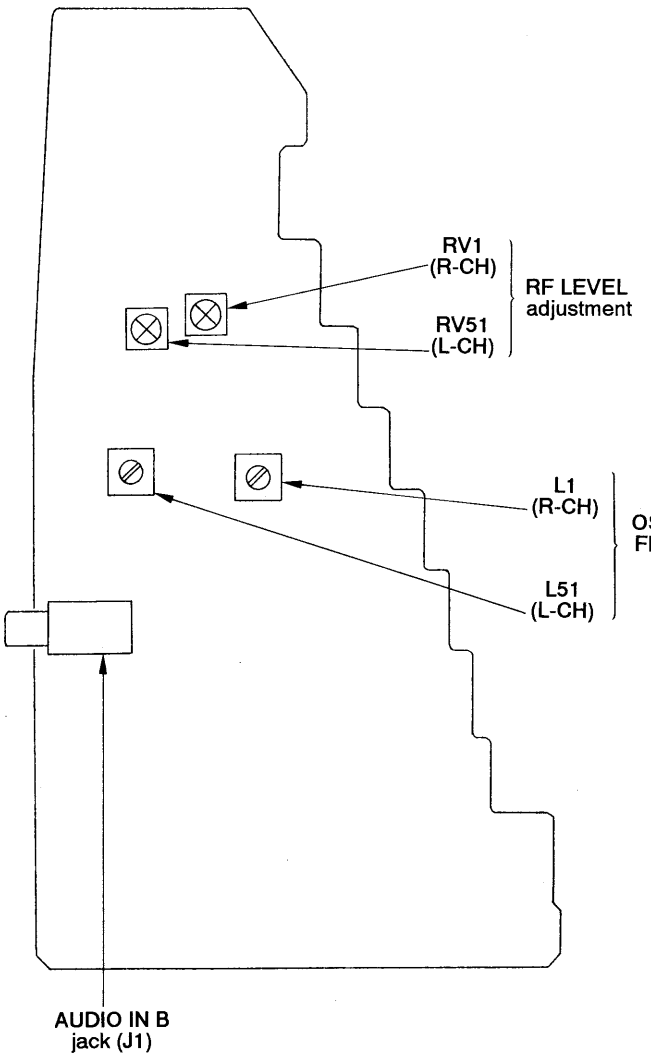


Adjustment Procedure:

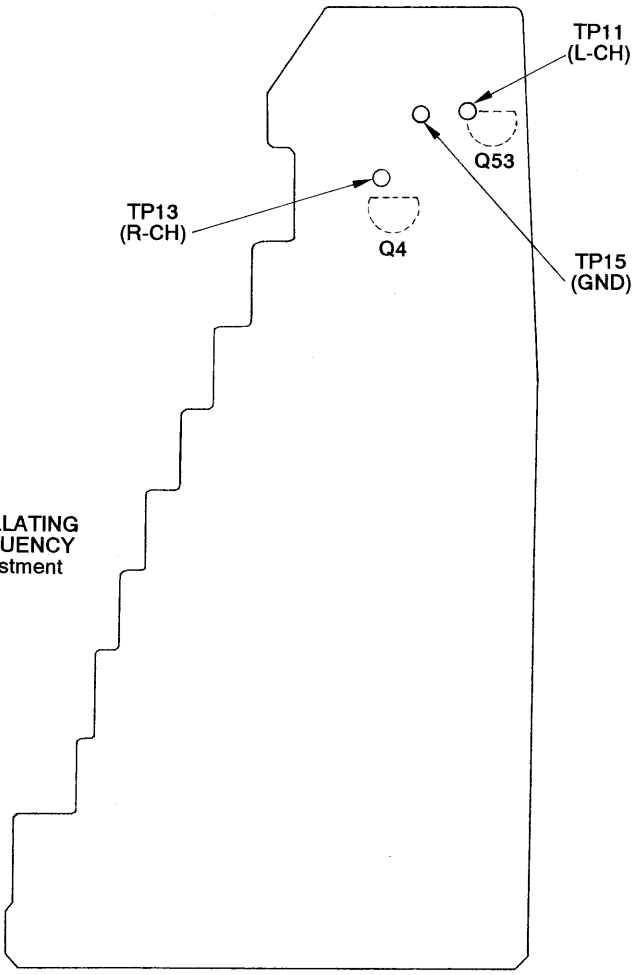
1. Short the circuit between TP2 (MUTE) and TP3 (REF).
2. Note down the level meter read at this time.
3. Release the short-circuit between TP2 (MUTE) and TP3 (REF).
4. Adjust RV2 so that the level meter read is 6 dB below the value noted down at step 2.

Connection and Adjustment Location

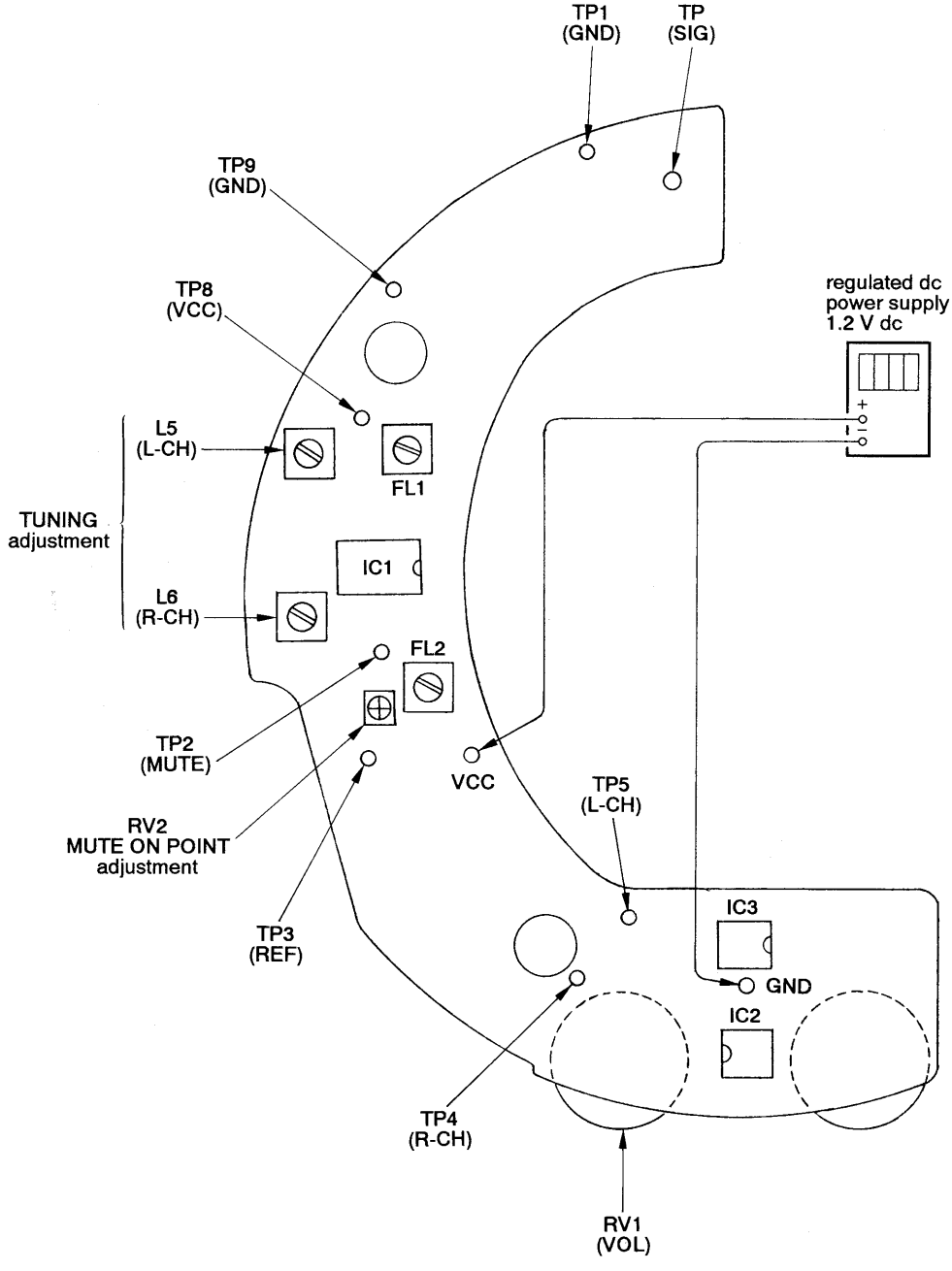
– TX board (Component Side) –



– TX board (Conductor Side) –



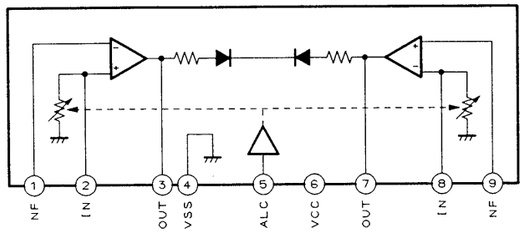
– **RX board (Conductor Side)** –



SECTION 3
DIAGRAMS

• IC Block Diagram

IC1 BA3308



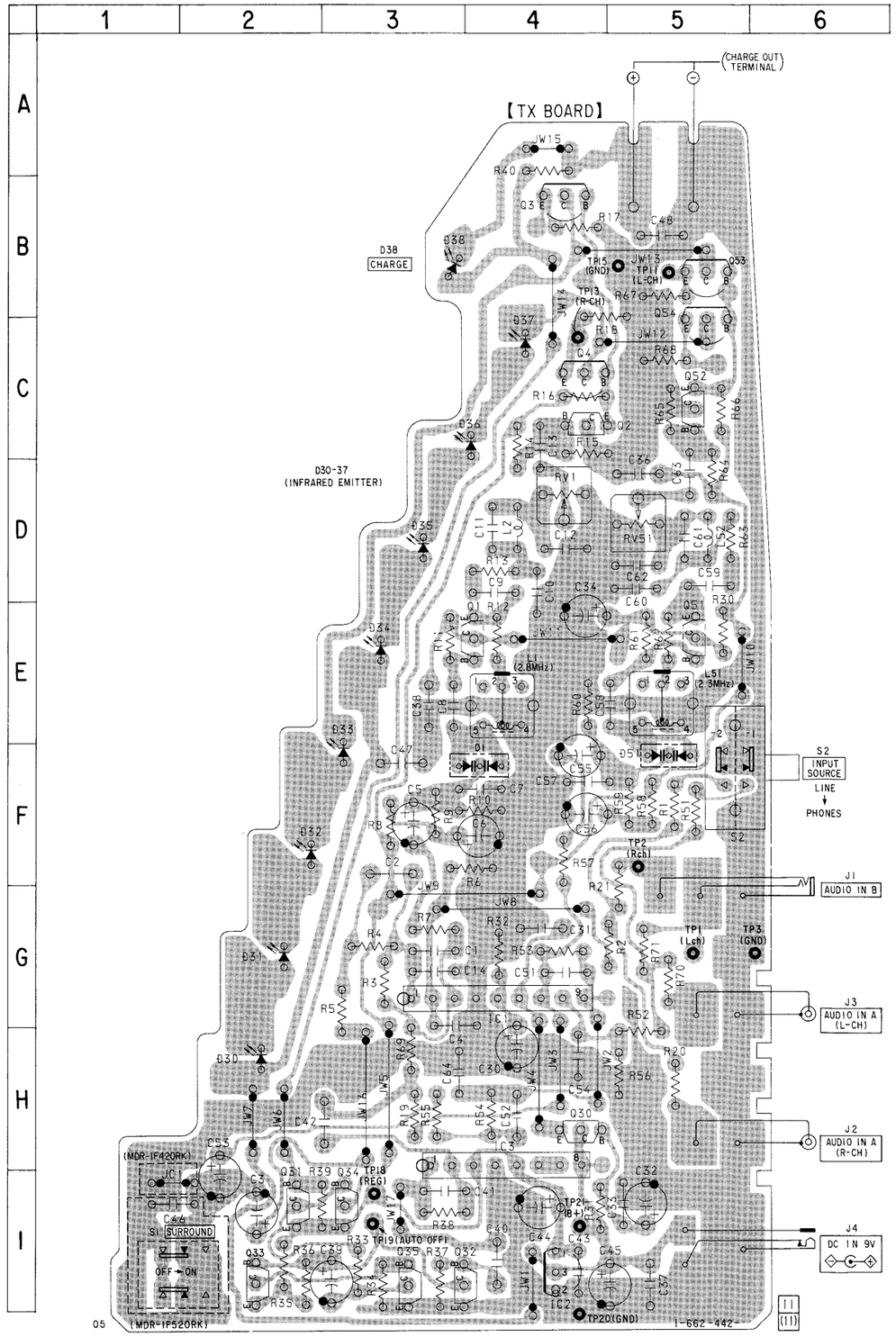
• Semiconductor Location

Ref. No.	Location
D1	F-4
D30	H-2
D31	G-2
D32	F-2
D33	F-3
D34	E-3
D35	D-3
D36	C-4
D37	C-4
D38	B-3
D51	F-5
IC1	G-4
IC2	I-4
IC3	H-4
Q1	E-4
Q2	C-4
Q3	B-4
Q4	C-4
Q30	H-4
Q31	I-2
Q32	I-3
Q33	I-2
Q34	I-3
Q35	I-3
Q51	E-5
Q52	C-5
Q53	B-5
Q54	B-5

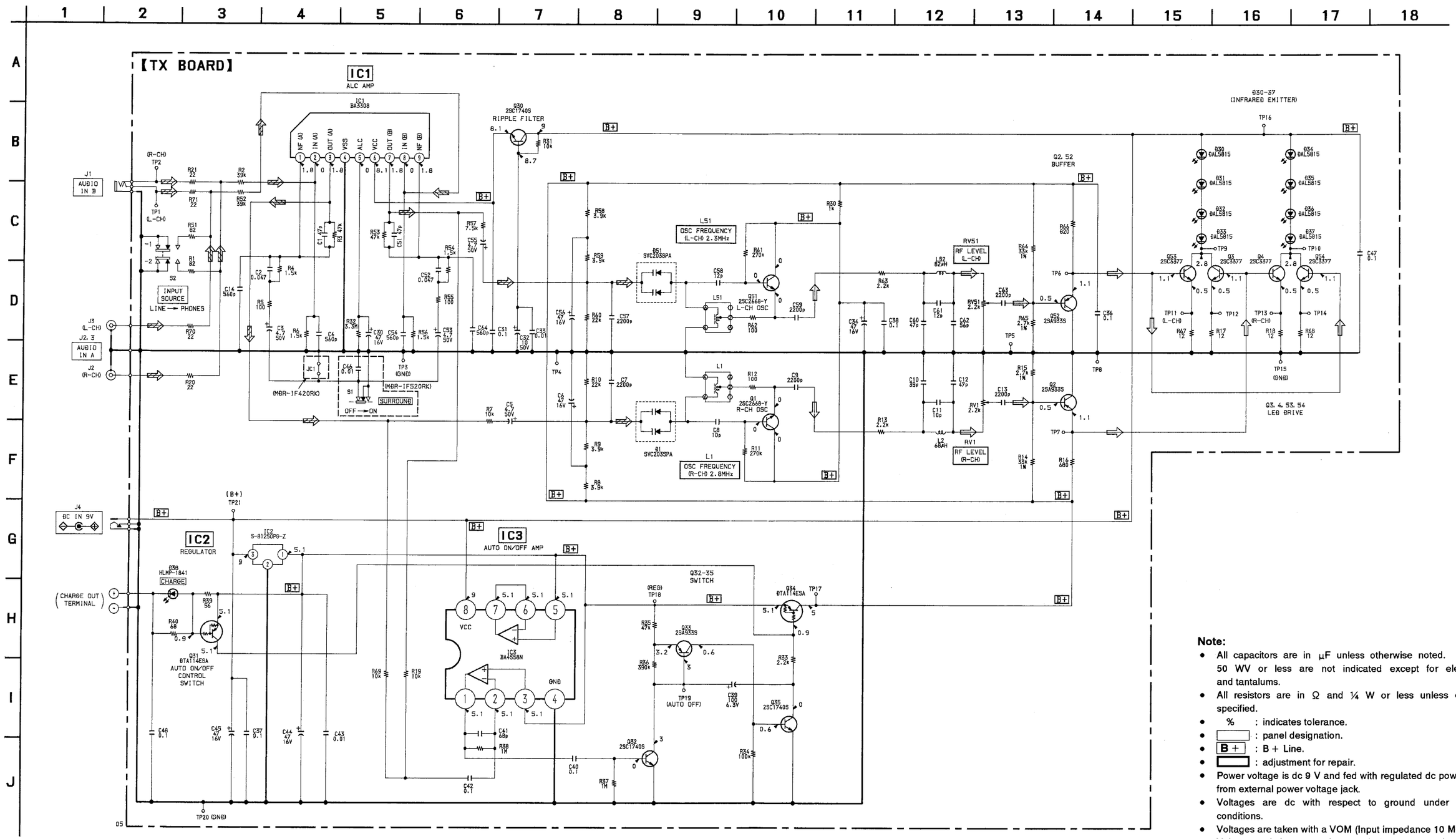
Note:

- ○——— : parts extracted from the component side.
- [ ]← : indicates side identified with part number.
- ▒▒▒ : Pattern from the side which enables seeing.

3-1. PRINTED WIRING BOARD – TRANSMITTER SECTION (TMR-IF420R/IF520R) –



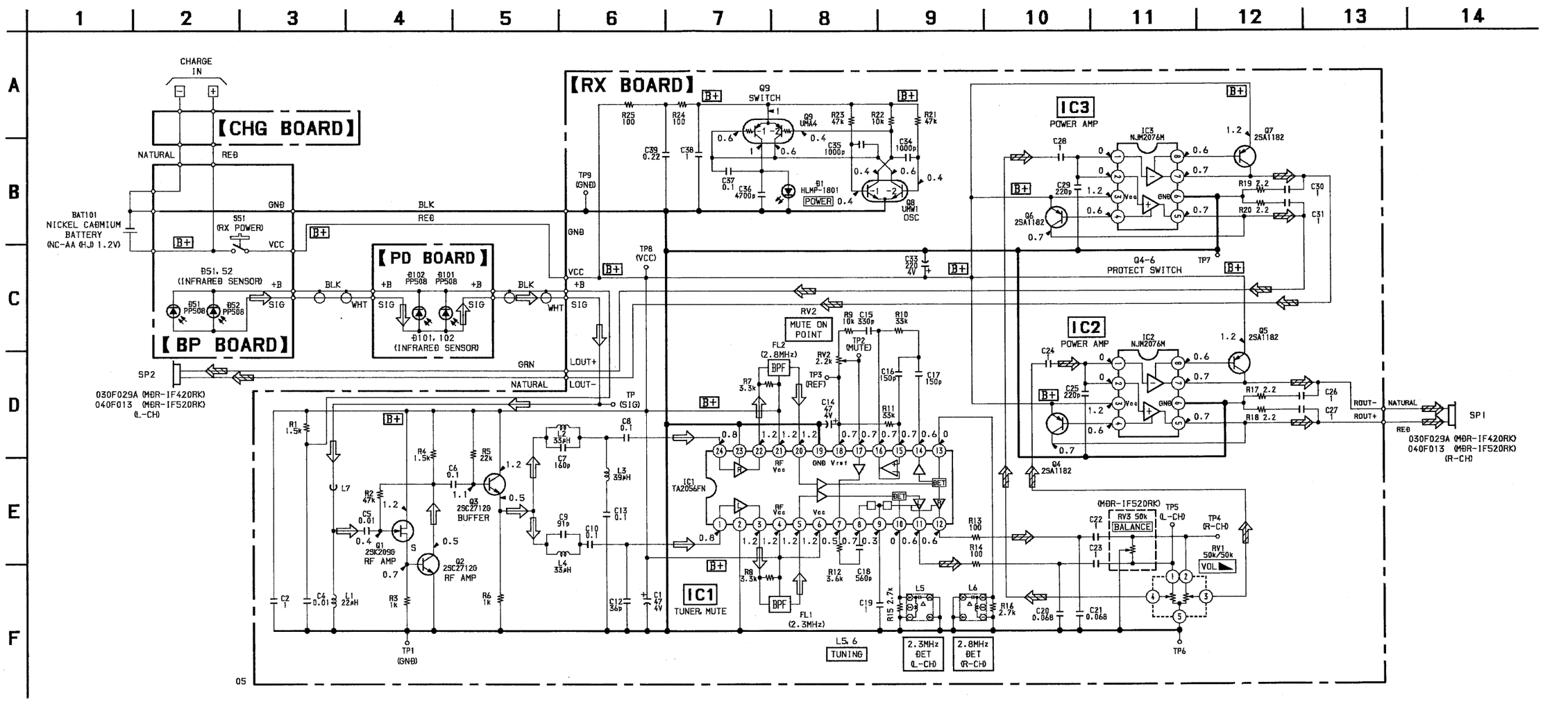
3-2. SCHEMATIC DIAGRAM – TRANSMITTER SECTION (TMR-IF420R/IF520R) –



Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼ W or less unless otherwise specified.
- % : indicates tolerance.
- ▭ : panel designation.
- B + : B + Line.
- ▭ : adjustment for repair.
- Power voltage is dc 9 V and fed with regulated dc power supply from external power voltage jack.
- Voltages are dc with respect to ground under no-signal conditions.
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Signal path.
  - ⇨ : AUDIO signal
  - ⇨ : RF signal

3-3. SCHEMATIC DIAGRAM – HEADPHONES SECTION (MDR-IF420R/IF520R) –

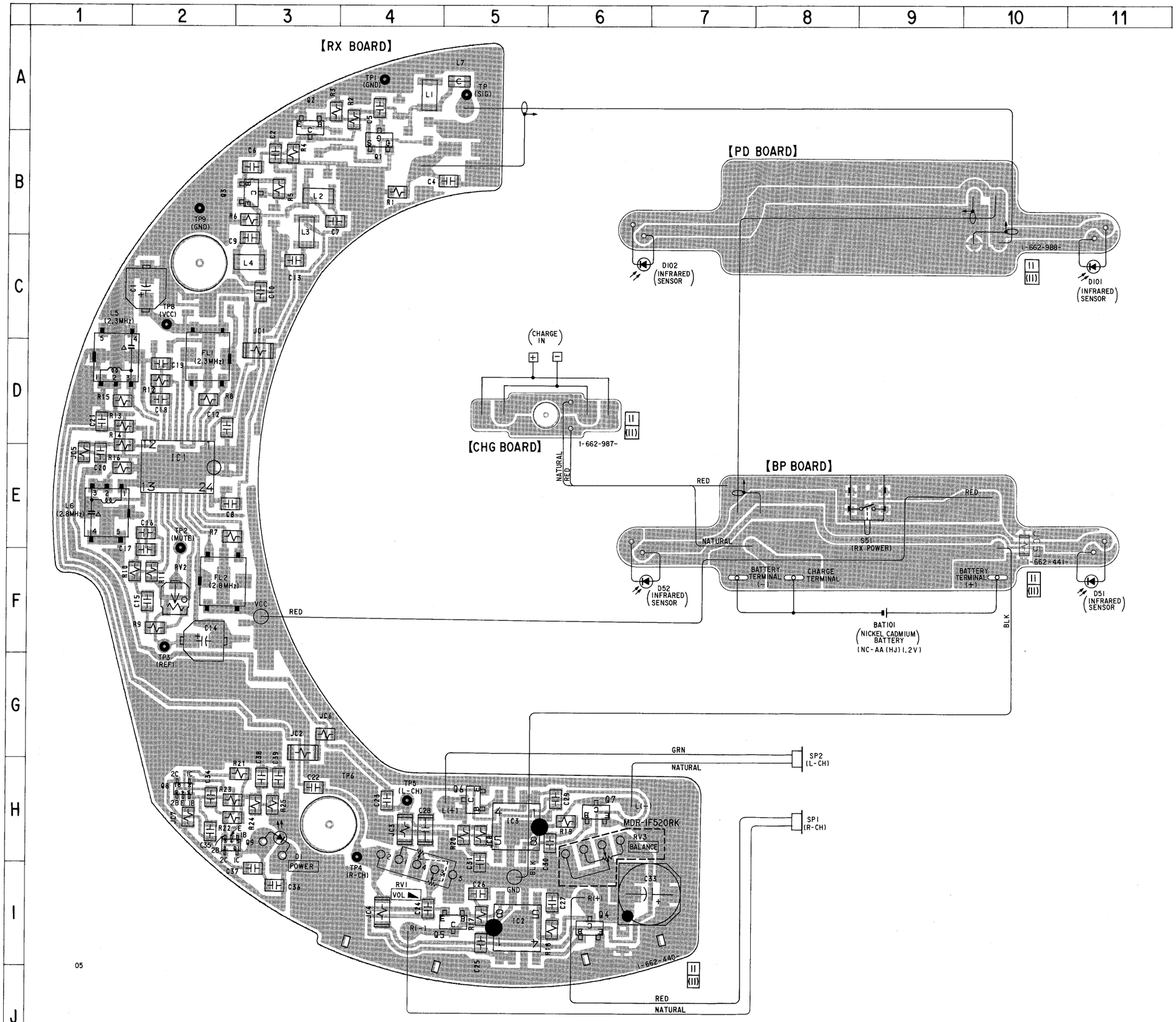


05

Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼ W or less unless otherwise specified.
- △ : internal component.
- ▭ : panel designation.
- B + : B + Line.
- ▭ : adjustment for repair.
- Power voltage is dc 1.2 V and fed with regulated dc power supply from TP8 and TP9 on the RX board.
- Voltages are dc with respect to ground under no-signal conditions.
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Signal path.
  - ▨▷ : AUDIO signal
  - ▷ : RF signal

3-4. PRINTED WIRING BOARDS – HEADPHONES SECTION (MDR-IF420R/IF520R) –



• **Semiconductor Location**

Ref. No.	Location
D1	H-3
D51	F-11
D52	F-7
D101	C-11
D102	C-7
IC1	E-2
IC2	I-5
IC3	H-5
Q1	B-4
Q2	A-3
Q3	B-3
Q4	I-6
Q5	I-5
Q6	H-5
Q7	H-6
Q8	H-2
Q9	H-3

Note:

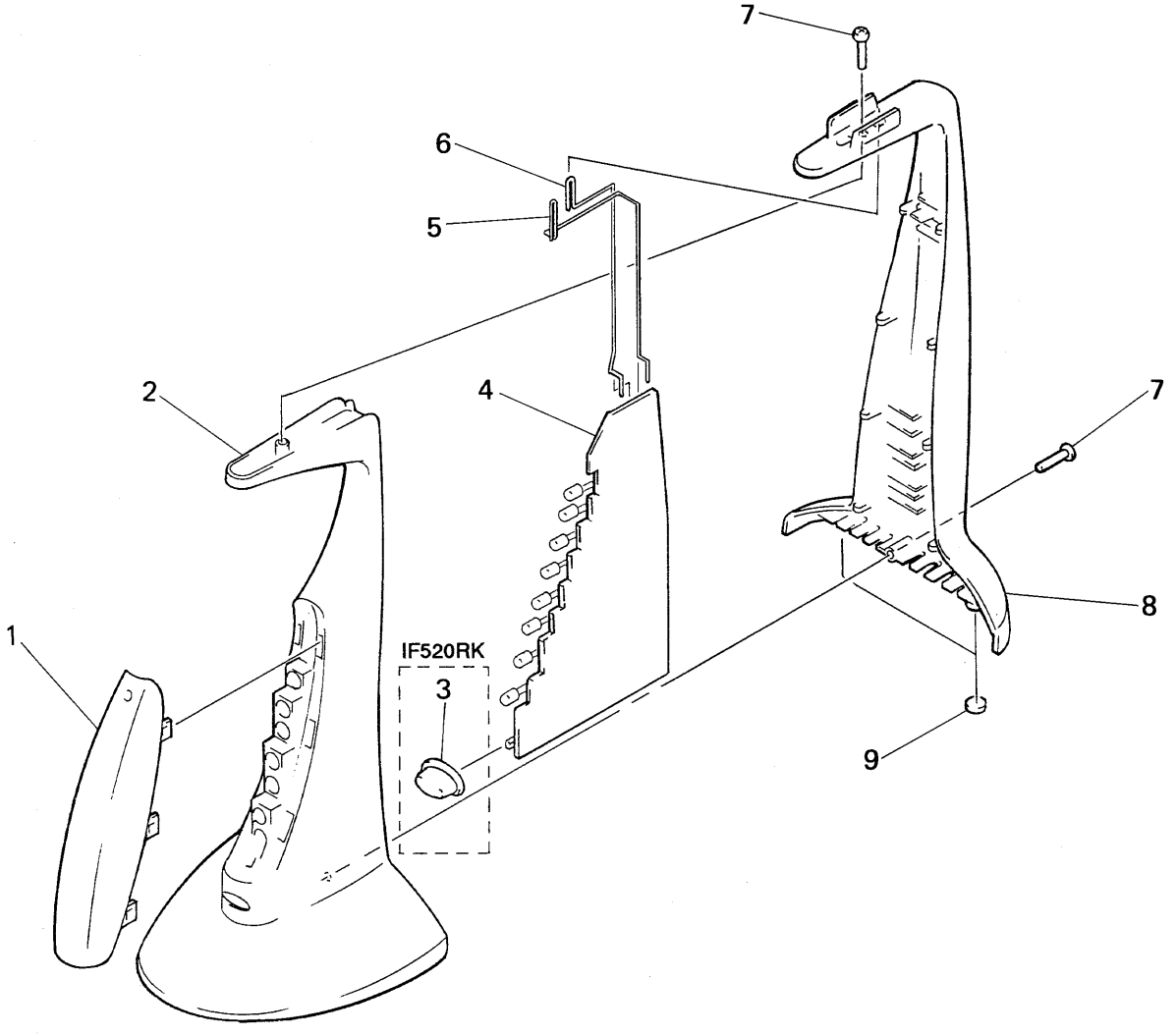
- ○——— : parts extracted from the component side.
- ——— : parts extracted from the conductor side.
- ⬚←— : indicates side identified with part number.
- △ : internal component.
- ▨ : Pattern from the side which enables seeing.

SECTION 4
EXPLODED VIEWS

NOTE:

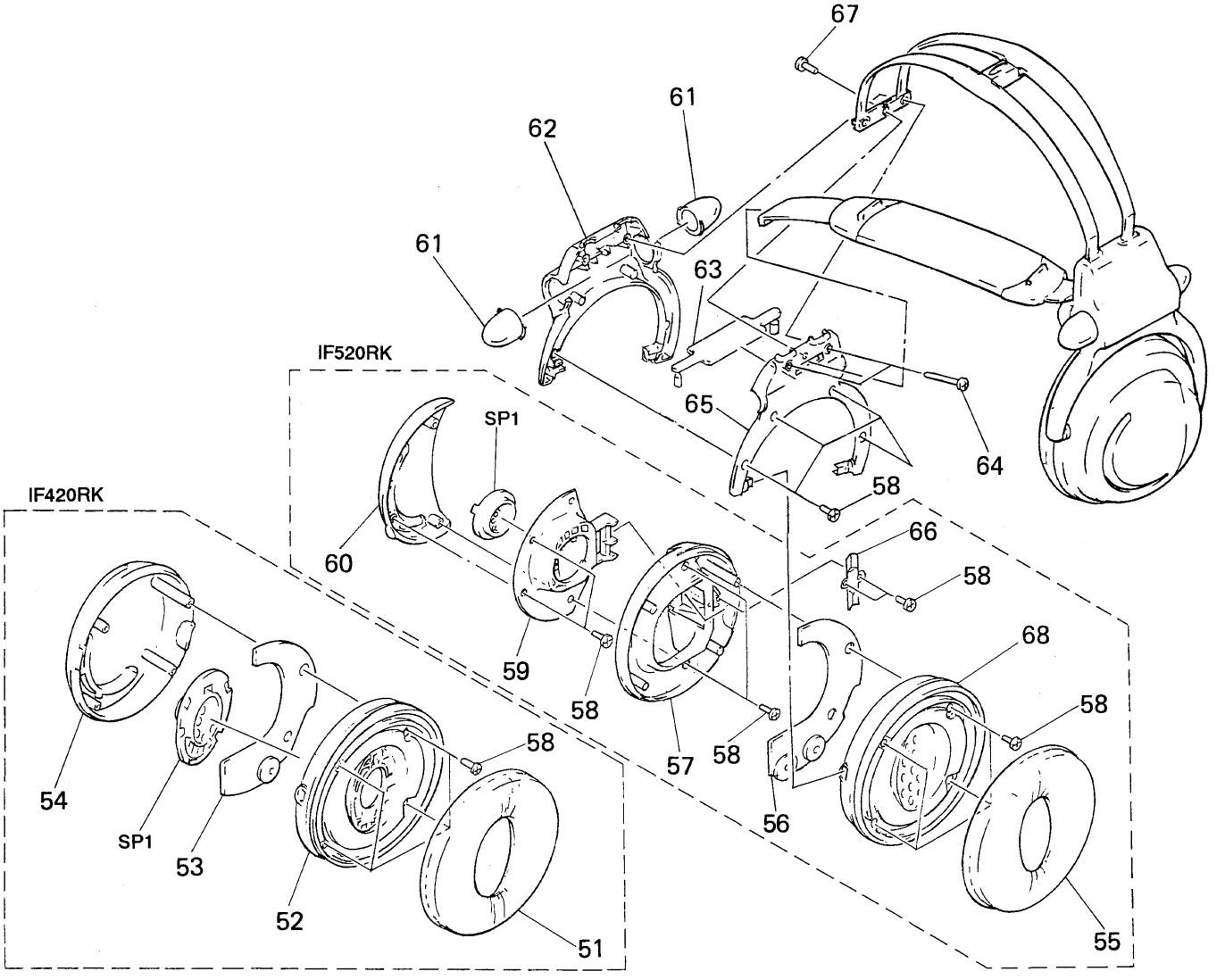
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
  Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ ↑
  Parts Color Cabinet's Color
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Accessories and packing materials are given in the last of the electrical parts list.

(1) TRANSMITTER SECTION (TMR-IF420R/IF520R)



Ref. No.	Part No.	Description	Remark
1	4-983-945-01	WINDOW, LUMINOUS	
2	4-983-943-01	CABINET (FRONT) (IF520RK)	
2	4-983-943-11	CABINET (FRONT) (IF420RK)	
3	4-983-948-01	BUTTON, SURROUND (IF520RK)	
* 4	A-4542-398-A	TX BOARD, COMPLETE (IF520RK)	
* 4	A-4542-400-A	TX BOARD, COMPLETE (IF420RK)	
5	4-983-947-01	TERMINAL (-), CHARGE	
6	4-983-946-01	TERMINAL (+), CHARGE	
7	3-713-790-61	SCREW (M2)	
8	4-983-944-01	CABINET (REAR)	
9	4-984-729-01	FOOT, RUBBER	

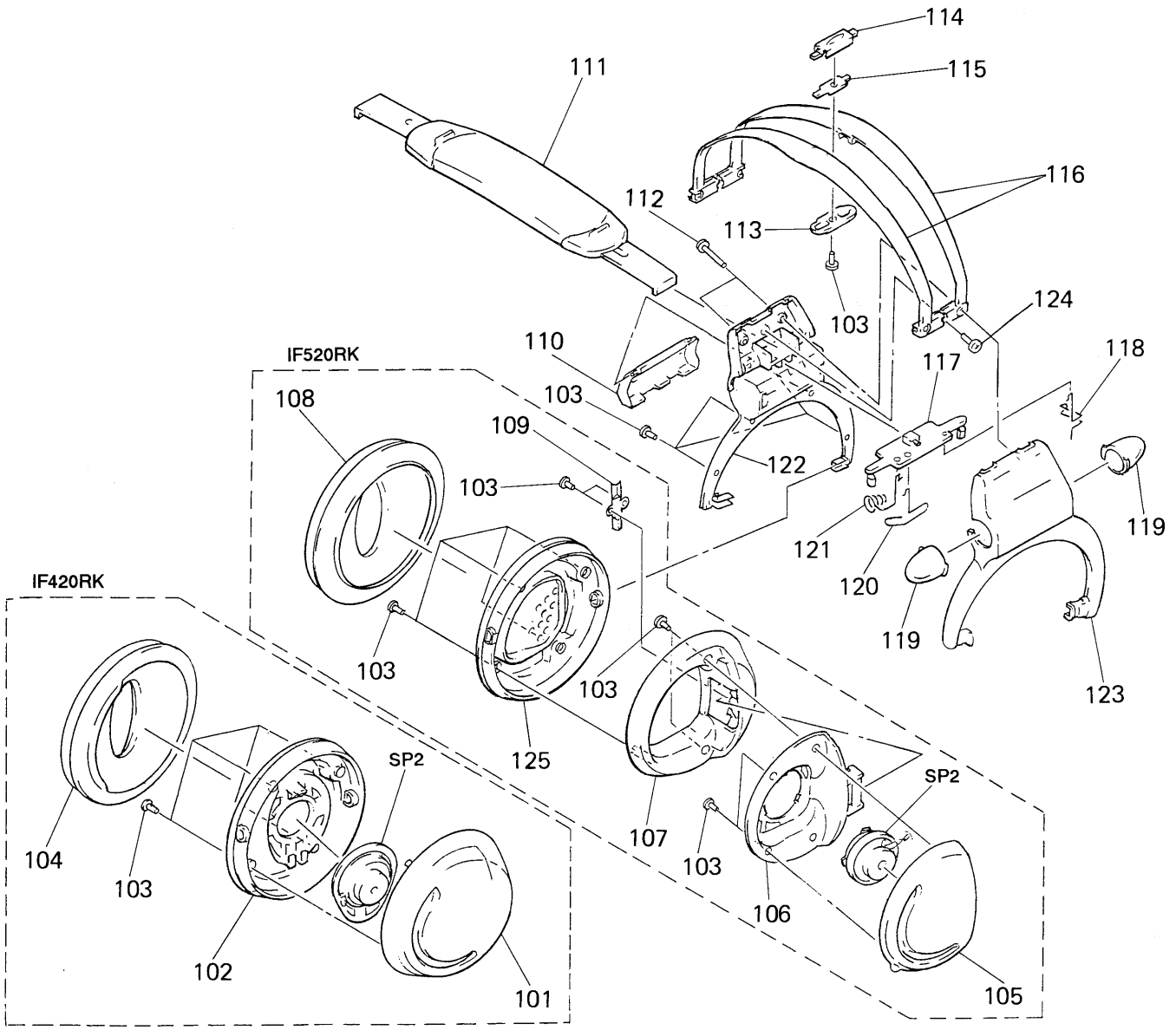
(2) HEADPHONE (R) SECTION (MDR-IF420R/IF520R)



Ref. No.	Part No.	Description	Remark
51	4-983-954-01	CUSHION, EAR (IF420RK)	
52	X-4947-958-1	PLATE (R) ASSY, FRONT (IF420RK)	
* 53	A-4542-399-A	RX BOARD, COMPLETE (IF420RK)	
54	X-4947-956-1	HOUSING (R) ASSY (IF420RK)	
55	4-983-942-01	CUSHION, EAR (IF520RK)	
* 56	A-4542-394-A	RX BOARD, COMPLETE (IF520RK)	
57	4-983-929-01	HOUSING (LARGE) (R) (IF520RK)	
58	3-948-339-01	SCREW, TAPPING	
59	X-4947-952-1	PLATE (SMALL) (R) ASSY, FRONT (IF520RK)	
60	X-4947-950-1	HOUSING (SMALL) (R) ASSY (IF520RK)	
61	4-983-925-01	WINDOW, RAY CATCHER	

Ref. No.	Part No.	Description	Remark
62	4-983-920-01	HANGER (R)	
* 63	1-662-988-11	PD BOARD	
64	3-713-790-61	SCREW (M2)	
65	4-983-921-01	COVER (R), HANGER (IF520RK)	
65	4-983-921-11	COVER (R), HANGER (IF420RK)	
66	4-983-937-01	SPRING, HINGE FIXED (IF520RK)	
67	3-669-480-21	SCREW TAPPING	
68	X-4947-954-1	PLATE (LARGE) (R) ASSY, FRONT (IF520RK)	
SP1	1-505-117-21	DRIVER 030F029A (R-CH) (IF420RK)	
SP1	1-504-578-11	DRIVER 040F013 (R-CH) (IF520RK)	

(3) HEADPHONE (L) SECTION (MDR-IF420R/IF520R)



Ref. No.	Part No.	Description	Remark
101	X-4947-957-1	HOUSING (L) ASSY (IF420RK)	
102	X-4947-959-1	PLATE (L) ASSY, FRONT (IF420RK)	
103	3-948-339-01	SCREW, TAPPING	
104	4-983-954-01	CUSHION, EAR (IF420RK)	
105	X-4947-951-1	HOUSING (SMALL) (L) ASSY (IF520RK)	
106	X-4947-953-1	PLATE (SMALL) (L) ASSY, FRONT (IF520RK)	
107	4-983-930-01	HOUSING (LARGE) (L) (IF520RK)	
108	4-983-942-01	CUSHION, EAR (IF520RK)	
109	4-983-937-01	SPRING, HINGE FIXED (IF520RK)	
110	4-983-924-01	LID, BATTERY CASE	
111	X-4947-422-1	SUSPENDER ASSY	
112	3-713-790-61	SCREW (M2)	
113	4-983-919-01	COVER (LOWER), CHARGE	
114	4-983-918-01	COVER (UPPER), CHARGE	

Ref. No.	Part No.	Description	Remark
* 115	1-662-987-11	CHG BOARD	
116	4-983-917-01	BAND, HEAD	
* 117	1-662-441-11	BP BOARD	
118	4-983-938-01	TERMINAL (+), BATTERY	
119	4-983-925-01	WINDOW, RAY CATCHER	
120	4-987-215-01	TERMINAL (CHARGE), BATTERY	
121	4-983-939-01	TERMINAL (-), BATTERY	
122	4-983-923-01	COVER (L), HANGER	
123	4-983-922-01	HANGER (L)	
124	3-669-480-21	SCREW TAPPING	
125	X-4947-955-1	PLATE (LARGE) (L) ASSY, FRONT (IF520RK)	
SP2	1-505-117-21	DRIVER 030F029A (L-CH) (IF420RK)	
SP2	1-504-578-11	DRIVER 040F013 (L-CH) (IF520RK)	

BP PD RX

SECTION 5
ELECTRICAL PARTS LIST

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL:Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F:nonflammable
- Abbreviation
  E1: 220V AC Area
  E2: 120V AC Area

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u:μ, for example:
  uA ..: μA.. uPA..: μPA..
  uPB..: μPB.. uPC..: μPC.. uPD..: μPD..
- CAPACITORS
  uF: μF
- COILS
  uH: μH

When indicating parts by reference number, please include the board.

The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remark
*	1-662-441-11	BP BOARD			
		********			
	4-983-938-01	TERMINAL (+), BATTERY			
	4-983-939-01	TERMINAL (-), BATTERY			
		< DIODE >			
D51	8-719-058-49	LED PP508 (INFRARED SENSOR)			
D52	8-719-058-49	LED PP508 (INFRARED SENSOR)			
		< CHIP CONDUCTOR >			
JC51	1-216-296-00	CONDUCTOR, CHIP (3216)			
		< SWITCH >			
S51	1-572-467-61	SWITCH, PUSH (1 KEY) (RX POWER)			
**********					
*	1-662-988-11	PD BOARD			
		********			
		< DIODE >			
D101	8-719-058-49	LED PP508 (INFRARED SENSOR)			
D102	8-719-058-49	LED PP508 (INFRARED SENSOR)			
**********					
*	A-4542-394-A	RX BOARD, COMPLETE (IF520RK)			
*	A-4542-399-A	RX BOARD, COMPLETE (IF420RK)			
		**********			
		< CAPACITOR >			
C1	1-126-607-11	ELECT CHIP	47uF	20%	4V
C2	1-164-346-11	CERAMIC CHIP	1uF		16V
C4	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C5	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C6	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C7	1-163-122-00	CERAMIC CHIP	160PF	5%	50V
C8	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C9	1-163-116-00	CERAMIC CHIP	91PF	5%	50V
C10	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C12	1-163-106-00	CERAMIC CHIP	36PF	5%	50V
C13	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C14	1-126-607-11	ELECT CHIP	47uF	20%	4V
C15	1-163-263-11	CERAMIC CHIP	330PF	5%	50V
C16	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C17	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C18	1-163-135-00	CERAMIC CHIP	560PF	5%	50V
C19	1-164-346-11	CERAMIC CHIP	1uF		16V
C20	1-164-344-11	CERAMIC CHIP	0.068uF	10%	25V
C21	1-164-344-11	CERAMIC CHIP	0.068uF	10%	25V
C22	1-164-346-11	CERAMIC CHIP	1uF		16V
C23	1-164-346-11	CERAMIC CHIP	1uF		16V
C24	1-164-346-11	CERAMIC CHIP	1uF		16V
C25	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
C26	1-164-346-11	CERAMIC CHIP	1uF		16V
C27	1-164-346-11	CERAMIC CHIP	1uF		16V
C28	1-162-638-11	CERAMIC CHIP	1uF		16V
C29	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
C30	1-164-346-11	CERAMIC CHIP	1uF		16V
C31	1-164-346-11	CERAMIC CHIP	1uF		16V
C33	1-126-246-11	ELECT CHIP	220uF	20%	4V
C34	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C35	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C36	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C37	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C38	1-164-346-11	CERAMIC CHIP	1uF		16V
C39	1-164-222-11	CERAMIC CHIP	0.22uF		25V
		< DIODE >			
D1	8-719-023-84	LED HLMP-1801 (POWER)			
		< BAND PASS FILTER >			
FL1	1-239-762-11	FILTER, BAND PASS (2.3 MHz)			
FL2	1-239-763-11	FILTER, BAND PASS (2.8 MHz)			
		< IC >			
IC1	8-759-364-96	IC TA2056FN-EL			
IC2	8-759-289-74	IC NJM2076M(TE2)			
IC3	8-759-289-74	IC NJM2076M(TE2)			

RX TX

Ref. No.	Part No.	Description	Remark
		< CHIP CONDUCTOR >	
JC1	1-216-296-00	CONDUCTOR, CHIP (3216)	
JC2	1-216-296-00	CONDUCTOR, CHIP (3216)	
JC3	1-216-296-00	CONDUCTOR, CHIP (3216)	
JC4	1-216-296-00	CONDUCTOR, CHIP (3216)	
JC5	1-216-295-00	CONDUCTOR, CHIP (2012)	
JC6	1-216-295-00	CONDUCTOR, CHIP (2012)	
JC7	1-216-295-00	CONDUCTOR, CHIP (2012)	
JC8	1-216-295-00	CONDUCTOR, CHIP (2012)	
		< COIL/FERRITE BEAD >	
L1	1-410-385-11	INDUCTOR CHIP 22uH	
L2	1-410-387-11	INDUCTOR CHIP 33uH	
L3	1-410-388-31	INDUCTOR CHIP 39uH	
L4	1-410-387-11	INDUCTOR CHIP 33uH	
L5	1-411-530-21	COIL (DET) (2.3 MHz)	
L6	1-411-531-21	COIL (DET) (2.8 MHz)	
L7	1-414-234-11	INDUCTOR, FERRITE BEAD	
		< TRANSISTOR >	
Q1	8-729-220-93	TRANSISTOR 2SK209-G	
Q2	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q3	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q4	8-729-030-31	TRANSISTOR 2SA1182-0(TE85L)	
Q5	8-729-030-31	TRANSISTOR 2SA1182-0(TE85L)	
Q6	8-729-030-31	TRANSISTOR 2SA1182-0(TE85L)	
Q7	8-729-030-31	TRANSISTOR 2SA1182-0(TE85L)	
Q8	8-729-927-68	TRANSISTOR UMW1	
Q9	8-729-929-41	TRANSISTOR UMA4	
		< RESISTOR >	
R1	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
R2	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R3	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R4	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
R5	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R6	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R7	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R8	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R9	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R10	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R11	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R12	1-216-062-00	METAL CHIP 3.6K 5% 1/10W	
R13	1-216-025-00	METAL CHIP 100 5% 1/10W	
R14	1-216-025-00	METAL CHIP 100 5% 1/10W	
R15	1-216-059-00	METAL CHIP 2.7K 5% 1/10W	
R16	1-216-059-00	METAL CHIP 2.7K 5% 1/10W	
R17	1-216-298-00	METAL CHIP 2.2 5% 1/10W	
R18	1-216-298-00	METAL CHIP 2.2 5% 1/10W	
R19	1-216-298-00	METAL CHIP 2.2 5% 1/10W	
R20	1-216-298-00	METAL CHIP 2.2 5% 1/10W	
R21	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R22	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R23	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R24	1-216-025-00	METAL CHIP 100 5% 1/10W	
R25	1-216-025-00	METAL CHIP 100 5% 1/10W	
		< VARIABLE RESISTOR >	
RV1	1-223-517-11	RES, VAR, CARBON 50K/50K (VOL ⌐)	
RV2	1-223-274-11	RES, ADJ, CERMET 2.2K	
RV3	1-223-516-11	RES, VAR, CARBON 50K (BALANCE) (IF520RK)	
**********			
*	A-4542-398-A	TX BOARD, COMPLETE (IF520RK)	
*	A-4542-400-A	TX BOARD, COMPLETE (IF420RK)	
		**********	
		< CAPACITOR >	
C1	1-162-215-31	CERAMIC 47PF 5% 50V	
C2	1-130-491-00	MYLAR 0.047uF 5% 50V	
C3	1-126-963-11	ELECT 4.7uF 20% 50V	
C4	1-162-291-31	CERAMIC 560PF 10% 50V	
C5	1-126-963-11	ELECT 4.7uF 20% 50V	
C6	1-104-664-11	ELECT 47uF 20% 16V	
C7	1-162-302-11	CERAMIC 0.0022uF 20% 16V	
C8	1-162-199-31	CERAMIC 10PF 5% 50V	
C9	1-162-302-11	CERAMIC 0.0022uF 20% 16V	
C10	1-162-213-31	CERAMIC 39PF 5% 50V	
C11	1-162-199-31	CERAMIC 10PF 5% 50V	
C12	1-162-215-31	CERAMIC 47PF 5% 50V	
C13	1-162-302-11	CERAMIC 0.0022uF 20% 16V	
C14	1-162-291-31	CERAMIC 560PF 10% 50V	
C30	1-104-664-11	ELECT 47uF 20% 16V	
C31	1-162-851-11	CERAMIC 0.1uF 16V	
C32	1-124-907-11	ELECT 10uF 20% 50V	
C33	1-162-306-11	CERAMIC 0.01uF 30% 16V	
C34	1-104-664-11	ELECT 47uF 20% 16V	
C36	1-162-851-11	CERAMIC 0.1uF 16V	
C37	1-162-851-11	CERAMIC 0.1uF 16V	
C38	1-162-851-11	CERAMIC 0.1uF 16V	
C39	1-126-968-11	ELECT 100uF 20% 6.3V	
C40	1-162-851-11	CERAMIC 0.1uF 16V	
C41	1-162-219-31	CERAMIC 68PF 5% 50V	
C42	1-162-851-11	CERAMIC 0.1uF 16V	
C43	1-162-306-11	CERAMIC 0.01uF 30% 16V	
C44	1-104-664-11	ELECT 47uF 20% 16V	
C45	1-104-664-11	ELECT 47uF 20% 16V	
C46	1-162-306-11	CERAMIC 0.01uF 30% 16V (IF520RK)	

TX

Ref. No.	Part No.	Description			Remark
C47	1-162-851-11	CERAMIC	0.1uF		16V
C48	1-162-851-11	CERAMIC	0.1uF		16V
C51	1-162-215-31	CERAMIC	47PF	5%	50V
C52	1-130-491-00	MYLAR	0.047uF	5%	50V
C53	1-126-963-11	ELECT	4.7uF	20%	50V
C54	1-162-291-31	CERAMIC	560PF	10%	50V
C55	1-126-963-11	ELECT	4.7uF	20%	50V
C56	1-104-664-11	ELECT	47uF	20%	16V
C57	1-162-302-11	CERAMIC	0.0022uF	20%	16V
C58	1-162-201-31	CERAMIC	12PF	5%	50V
C59	1-162-302-11	CERAMIC	0.0022uF	20%	16V
C60	1-162-215-31	CERAMIC	47PF	5%	50V
C61	1-162-201-31	CERAMIC	12PF	5%	50V
C62	1-162-217-31	CERAMIC	56PF	5%	50V
C63	1-162-302-11	CERAMIC	0.0022uF	20%	16V
C64	1-162-291-31	CERAMIC	560PF	10%	50V
		< DIODE >			
D1	8-719-057-93	DIODE	SVC203SPA-AL		
D30	8-719-992-13	LED	LIR5BE (INFRARED EMITTER)		
D31	8-719-992-13	LED	LIR5BE (INFRARED EMITTER)		
D32	8-719-992-13	LED	LIR5BE (INFRARED EMITTER)		
D33	8-719-992-13	LED	LIR5BE (INFRARED EMITTER)		
D34	8-719-992-13	LED	LIR5BE (INFRARED EMITTER)		
D35	8-719-992-13	LED	LIR5BE (INFRARED EMITTER)		
D36	8-719-992-13	LED	LIR5BE (INFRARED EMITTER)		
D37	8-719-992-13	LED	LIR5BE (INFRARED EMITTER)		
D38	8-719-023-85	LED	HLMP-1841 (CHARGE)		
D51	8-719-057-93	DIODE	SVC203SPA-AL		
		< IC >			
IC1	8-759-939-73	IC	BA3308		
IC2	8-759-095-60	IC	S-81250PG		
IC3	8-759-989-89	IC	BA4558N		
		< JACK >			
J1	1-764-270-11	JACK, STEREO MINIATURE (DIA. 3.5) (AUDIO IN B)			
J2	1-764-269-11	JACK, PIN (AUDIO IN A R-CH)			
J3	1-764-269-21	JACK, PIN (AUDIO IN A L-CH)			
J4	1-778-380-11	JACK, DC (POLARITY UNIFIED TYPE) (DC IN 9V)			
		< COIL >			
L1	1-411-713-11	COIL (OSC) (2.8 MHz)			
L2	1-410-519-11	INDUCTOR	68uH		
L51	1-411-714-11	COIL (OSC) (2.3 MHz)			
L52	1-410-520-11	INDUCTOR	82uH		

Ref. No.	Part No.	Description			Remark
		< TRANSISTOR >			
Q1	8-729-266-83	TRANSISTOR	2SC2668-Y		
Q2	8-729-119-76	TRANSISTOR	2SA1175-HFE		
Q3	8-729-024-00	TRANSISTOR	2SC3377-T93QR		
Q4	8-729-024-00	TRANSISTOR	2SC3377-T93QR		
Q30	8-729-119-78	TRANSISTOR	2SC403SP-51		
Q31	8-729-029-21	TRANSISTOR	DTA114ESA-TP		
Q32	8-729-119-78	TRANSISTOR	2SC403SP-51		
Q33	8-729-119-76	TRANSISTOR	2SA1175-HFE		
Q34	8-729-029-21	TRANSISTOR	DTA114ESA-TP		
Q35	8-729-119-78	TRANSISTOR	2SC403SP-51		
Q51	8-729-266-83	TRANSISTOR	2SC2668-Y		
Q52	8-729-119-76	TRANSISTOR	2SA1175-HFE		
Q53	8-729-024-00	TRANSISTOR	2SC3377-T93QR		
Q54	8-729-024-00	TRANSISTOR	2SC3377-T93QR		
		< RESISTOR >			
R1	1-249-404-00	CARBON	82	5%	1/4W
R2	1-249-436-11	CARBON	39K	5%	1/4W
R3	1-249-437-11	CARBON	47K	5%	1/4W
R4	1-249-419-11	CARBON	1.5K	5%	1/4W
R5	1-247-807-31	CARBON	100	5%	1/4W
R6	1-249-419-11	CARBON	1.5K	5%	1/4W
R7	1-249-429-11	CARBON	10K	5%	1/4W
R8	1-249-424-11	CARBON	3.9K	5%	1/4W
R9	1-249-424-11	CARBON	3.9K	5%	1/4W
R10	1-247-863-91	CARBON	22K	5%	1/4W
R11	1-247-889-00	CARBON	270K	5%	1/4W
R12	1-247-807-31	CARBON	100	5%	1/4W
R13	1-249-421-11	CARBON	2.2K	5%	1/4W
R14	1-215-457-00	METAL	33K	1%	1/4W
R15	1-215-431-00	METAL	2.7K	1%	1/4W
R16	1-249-415-11	CARBON	680	5%	1/4W
R17	1-249-394-11	CARBON	12	5%	1/4W
R18	1-249-394-11	CARBON	12	5%	1/4W
R19	1-249-429-11	CARBON	10K	5%	1/4W
R20	1-247-791-91	CARBON	22	5%	1/4W
R21	1-247-791-91	CARBON	22	5%	1/4W
R30	1-249-417-11	CARBON	1K	5%	1/4W
R31	1-249-429-11	CARBON	10K	5%	1/4W
R32	1-259-882-11	CARBON	3.3M	5%	1/4W
R33	1-249-421-11	CARBON	2.2K	5%	1/4W
R34	1-249-441-11	CARBON	100K	5%	1/4W
R35	1-249-437-11	CARBON	47K	5%	1/4W
R36	1-247-893-11	CARBON	390K	5%	1/4W
R37	1-247-903-00	CARBON	1M	5%	1/4W
R38	1-247-903-00	CARBON	1M	5%	1/4W
R39	1-249-402-11	CARBON	56	5%	1/4W

Ref. No.	Part No.	Description			Remark
R40	1-249-403-11	CARBON	68	5%	1/4W
R51	1-249-404-00	CARBON	82	5%	1/4W
R52	1-249-436-11	CARBON	39K	5%	1/4W
R53	1-249-437-11	CARBON	47K	5%	1/4W
R54	1-249-419-11	CARBON	1.5K	5%	1/4W
R55	1-247-807-31	CARBON	100	5%	1/4W
R56	1-249-419-11	CARBON	1.5K	5%	1/4W
R57	1-247-852-11	CARBON	7.5K	5%	1/4W
R58	1-249-424-11	CARBON	3.9K	5%	1/4W
R59	1-249-424-11	CARBON	3.9K	5%	1/4W
R60	1-247-863-91	CARBON	22K	5%	1/4W
R61	1-247-889-00	CARBON	270K	5%	1/4W
R62	1-247-807-31	CARBON	100	5%	1/4W
R63	1-249-421-11	CARBON	2.2K	5%	1/4W
R64	1-215-457-00	METAL	33K	1%	1/4W
R65	1-215-431-00	METAL	2.7K	1%	1/4W
R66	1-249-416-11	CARBON	820	5%	1/4W
R67	1-249-394-11	CARBON	12	5%	1/4W
R68	1-249-394-11	CARBON	12	5%	1/4W
R69	1-249-429-11	CARBON	10K	5%	1/4W
R70	1-247-791-91	CARBON	22	5%	1/4W
R71	1-247-791-91	CARBON	22	5%	1/4W

< VARIABLE RESISTOR >

RV1	1-225-213-21	RES, ADJ 2.2K
RV51	1-225-213-21	RES, ADJ 2.2K

< SWITCH >

S1	1-692-920-11	SWITCH, PUSH (1 KEY) (SURROUND) (IF520RK)
S2	1-571-478-11	SWITCH, SLIDE (INPUT SOURCE)

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MISCELLANEOUS

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SP1	1-504-578-11	DRIVER 040F013 (R-CH) (IF520RK)
SP1	1-505-117-21	DRIVER 030F029A (R-CH) (IF420RK)
SP2	1-504-578-11	DRIVER 040F013 (L-CH) (IF520RK)
SP2	1-505-117-21	DRIVER 030F029A (L-CH) (IF420RK)

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ACCESSORIES & PACKING MATERIALS

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⚠	1-465-817-31	ADAPTOR, AC (AC-96NES) (IF420RK:AEP/IF520RK:AEP, E1)
⚠	1-467-731-21	ADAPTOR, AC (IF420RK:UK/IF520RK:UK)
⚠	1-467-852-11	ADAPTOR, AC (IF520RK:Australian)
	1-473-606-11	ADAPTOR, PLUG
	1-528-748-11	BATTERY, NICKEL CADMIUM (IF420RK:US, Canadian, AEP, UK/ IF520RK:US, Canadian, AEP, UK)
	1-528-748-31	BATTERY, NICKEL CADMIUM (IF520RK:E, Australian, Tourist)
	1-559-906-32	CORD, CONNECTION (AUDIO)
⚠	1-569-008-11	ADAPTOR, CONVERSION 2P (IF520RK:Tourist)
⚠	1-693-007-21	ADAPTOR, AC (AC-S195) (IF520RK:Tourist)
⚠	1-693-029-11	ADAPTOR, AC (AC-96NB) (IF420RK:US, Canadian/ IF520RK:US, Canadian, E2)
	3-757-054-51	INSTRUCTION (NI-CD RECYCLE) (IF420RK:US, Canadian/IF520RK:US, Canadian)
	3-858-448-11	MANUAL, INSTRUCTION (ENGLISH, FRENCH, GERMAN, SPANISH)
	3-858-448-21	MANUAL, INSTRUCTION (DUTCH, ITALIAN, PORTUGUESE)
	3-954-355-01	LABEL (C), NI-CD RECYCLE (IF420RK:US, Canadian/IF520RK:US, Canadian)

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

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